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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/782,072	02/12/2001	Huei-Tarng Liou	11993/1	9795

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KENYON & KENYON
ONE BROADWAY
NEW YORK, NY 10004

EXAMINER	
CLEVELAND, MICHAEL B	
ART UNIT	PAPER NUMBER
1762	

DATE MAILED: 03/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/782,072	LIOU ET AL.	
	Examiner	Art Unit	
	Michael Cleveland	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 January 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5 and 10-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5 and 10-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/27/2005 has been entered.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claim 12 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The proposed negative limitation does not have support in the originally-filed disclosure. It has been held that negative limitations, which did not appear in the specification as-filed, introduce new concepts and violate the description requirement of 35 U.S.C. § 112. *Ex parte Grasselli et al.*, 231 USPQ 393 (BdPatApp&Int 1983): "It might be added that the express exclusion of certain elements implies the permissible inclusion of all other elements not so expressly excluded. This clearly illustrates that such negative limitations do, in fact, introduce new concepts.".

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are

> such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1 and 10-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wainright (U.S. Patent 5,052,382, hereafter '382) in view of Fefferman (U.S. Patent 3,653,946, hereafter '946), Fitch (U.S. Patent 2,984,575, hereafter '575), Leinkram et al. (U.S. 3,607,379, hereafter '379), and Kurschner et al. (U.S. Patent 5,795,841, hereafter '841).

'382 teaches a gold-coated silica tube for use as an electrode in an ozone generator (col. 3, lines 11-53), but does not teach a method of making the electrode. Therefore, one of ordinary skill in the art would have been motivated to have looked to the related art for methods of forming gold on ceramics such as silica.

Claims 1 and 4: '946 teaches a method of gilding a ceramic substrate, such as alumina (col. 4, lines 33-35), which comprises:

preparing a coating material which contains gold (col. 2, lines 58-75);

cleansing the substrate (col. 3, lines 13-16), which may be alumina (col. 4, lines 33-35);

brushing (i.e., smearing) the prepared coating material on the substrate to form a film thereon (col. 3, lines 18-22);

drying the substrate after brushing on the coating material (col. 3, lines 22-24);

baking the substrate at a temperature of 427-1054 °C to form a gold film (col. 3, lines 30-col. 4, line 15);

and cooling the substrate to room temperature (col. 3, lines 69-75).

'946 does not explicitly teach A) a tubular substrate, B) drying the cleaned substrate, C) inspection of the substrate to see if the film is free of defects, D) the particularly claimed baking time and temperature, and E) retrieval of the tube after the temperature in the stove is below 110 °C.

A) '946 does not teach that the substrate is tubular. However, '575 teaches that decorative gold coatings may be provided for tubular ceramic substrates. See, for example, col. 12, lines 5-21, which demonstrate tubular substrates including a tumbler, a bottle, and a tube. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the method of '946 on a tubular ceramic substrate to have provided a

decorative coating for the substrate because '946 teaches a method of applying adherent gold coatings on ceramic substrates and '575 teaches that decorative gold coatings are desired on tubular ceramic substrates.

B) '946 does not explicitly teach drying the cleaned substrate. However, the examiner takes Official Notice that it is well known to dry substrates between cleaning and coating steps. For example, Leinkram et al. (U.S. 3,607,379), col. 1, line 73-col. 2, line 15, is cited as demonstrating drying a substrate between steps of cleaning and applying a metal. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have dried the substrate after cleaning it because such is a conventional step in the deposition of metals onto cleaned ceramic substrates.

C) '946 does not explicitly teach inspection of the substrate to see if the film is uniform and free of defects. However, it is extremely well known to inspect a completed product to determine if it is satisfactory. For instance, '575 teaches that after the gold films are formed, they are observed, and the quality of the film is judged (col. 12, lines 1-22). In addition, '946 teaches that defects, such as bubbles and blisters, are undesirable. Taking the references as a whole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have inspected the films to judge the quality (i.e., uniformity) and to have evaluated whether such defects existed in order to have determined if the products would have been suitable.

D) '946 does not specifically teach baking at 780-880 °C. However, the disclosed baking range (427-1054 °C, discussed above) overlaps the claimed range. The baking times of '946 are less than the claimed times. However, '946 discloses that an adherent gold coating is desired (Title) and indicates that further baking may strengthen the bond of gold to the substrate (col. 4, lines 3-15). However, '841 teaches that the adhesion of metals, such as gold (col. 1, lines 10-19 and col. 2, lines 1-4), to ceramic substrates, such as alumina or quartz (col. 1, lines 50-65) may be improved by heating at 200-1000 °C for 0.5 to 24 hours. The heat treatment temperatures and times overlap the claimed ranges. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected a temperature and time from within the claimed ranges because '841 discloses that they are operative for increasing the adhesion of metals to ceramics. The subject matter as a whole would have been obvious to

one of ordinary skill in the art at the time the invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a *prima facie* case of obviousness, see *In re Malagari*, 182 U.S.P.Q. 549.

E) '946 does not explicitly state that the substrate is removed from the stove after the temperature has been reduced to room temperature. However, it does teach that the cooling of the substrate should be controlled in order to reduce stress (col. 3, lines 69-72). The Examples indicate that this may be done by leaving the substrate in the furnace (i.e., stove) until a certain temperature is reached (col. 4, lines 46-51; col. 5, lines 1-12). The substrate may be removed at approximately 200 °C. The teaching at col. 5, lines 10-12 demonstrates that a substrate may also be left in the oven until it reaches room temperature.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the method of '946, '575, '379, and '841 as the particular method of forming the electrode of '382 with a reasonable expectation of success because '946, '575, '379, and '841 teach operative methods of depositing gold on ceramics.

6. Claims 2-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wainright '382 in view of Fefferman '946, Fitch '575, Leinkram '379, and Kurschner '841, as described above regarding claim 1, and further in view of Chow et al. (U.S. Patent 5,759,230, hereafter '230).

'382, '946, '575, '575, and '841 are discussed above, but teach the use of gold resinates rather than gold chloride as a precursor for the gold film. However, '230 teaches that metal films may be made from metal precursor solutions including those of metal chlorides (col. 1, lines 6-8; col. 2, line 57-col. 3, line 10). Gold (III) chloride ($AuCl_3$) is specifically disclosed as an operative precursor in Table I. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used gold (III) chloride as the gold precursor in place of the gold resinates of '946 with the expectation of similar results because '230 teaches that it is also able to be decomposed to form a gold film.

The references do not explicitly teach that the concentration of the precursor is 10-11%. However, '841 suggests a precursor concentration of 0.01-2% (col. 2, lines 46-48), '575 appears to teach the use of about 10 weight % of the gold precursor (Examples IX and X), '946 teaches

the use of about 20% of the gold precursor (col. 4, lines 22-62), and '230 teaches the use of about 0.3-6 % of the gold precursor (Table I; the examiner assumed that the solution density was approximately that of the solvent, ethylene glycol: 9.31 lb./gal.). Taken collectively, the references suggest precursor concentrations of 0.01-20%. The subject matter as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a *prima facie* case of obviousness, see *In re Malagari*, 182 U.S.P.Q. 549.

Claim 3: '946 and '575 do not explicitly state that the substrate is kept at room temperature for 30 minutes after the coating material is smeared on. However, ozone generators require maintenance, and it would have been obvious to one of ordinary skill in the art at the time the invention was made to have performed such maintenance at room temperature. The time of the maintenance would be an engineering decision balancing the amount of maintenance performed and the amount of time off-line. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have optimized the maintenance time, including a value of about 30 minutes, in order to provide the optimum balance of proper maintenance of the generator and functioning time.

Claim 4: 12 hours is within the time range disclosed by '841, as discussed above.

Claim 5: '946 does not explicitly teach removing the substrate at less than 100 °C and cooling it at room temperature. However, the examples teach removing the substrate at about 200 °C (col. 4, lines 46-50; col. 5, lines 4-6) or room temperature (col. 5, lines 10-12), thereby teaching an effective range of room temperature to 200 °C. The subject matter as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected the overlapping portion of the range (just above room temperature to 100 °C) disclosed by the reference because overlapping ranges have been held to be a *prima facie* case of obviousness, see *In re Malagari*, 182 U.S.P.Q. 549.

Response to Arguments

7. Applicant's arguments filed 1/27/2005 have been fully considered but they are not persuasive.

Applicant argues that Fefferman does not teach retrieving tube which has been directly smeared with a gold composition from an oven at below 110 °C because, in the example, the first coating is retrieved at about 200 °C and is retrieved at room temperature only when the second coating is applied. The argument is unconvincing because the reference as a whole teaches that room temperature is an operative temperature for retrieving gold-coated tubes from ovens. The selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). See MPEP 2144.07. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have removed the tube after the first coating at room temperature instead of 200 °C with a reasonable expectation of success because the reference teaches that room temperature is suitable for such retrieval. Applicant is reminded that "differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical." (MPEP 2144.05.II.A.) Applicant has made no such showing regarding the retrieval temperature.

Applicant's second affidavit is acknowledged. However, it is unconvincing because it is not commensurate in scope with the claims. It asserts that the temperature range of 780-880 °C is critical, but does not present results at 780 nor 880 °C. The only value within the range is 800 °C. Also, the process of the affidavit is not commensurate is scope with the claims, which are not limited to the use of 10-11% concentration of gold (III) chloride in solution that is diluted with a sulfur-containing volatile oil, and it is unclear whether all the tubes were baked for times between 10 and 14 hours or if each was baked for the same specific time. If the latter is the case, the specific time must be identified.

Applicant argues that the phrase "after reaching 1200 °F, the substrate is allowed to cool slowly through normal radiation to room temperature (3 hours)." does not suggest retrieving the tube after the temperature in the stove is below 110 °C and putting the tube under room temperature." The Examiner disagrees. The substrate must be under room temperature (which is below 110 °C) if it cools to that final value, and the entire passage from lines 4-12 indicates that the substrate is not disturbed during cooling. The passage at col. 5, lines 4-6 indicates that the process of "cool[ing] slowly through normal radiation... to 400 °F" occurs in the furnace.

Therefore, the teaching at lines 10-12 of "slowly cool[ing] through normal radiation... to room temperature" reasonably appears to occur entirely in the furnace.

Applicant argues that the teaching of "cooling through normal radiation" at col. 5, lines 10-12 would necessarily involve removing the substrate from the oven. The argument is unconvincing because the reference clearly at col. 5, lines 4-6 teaches that "cooling through normal radiation" is a process that takes place within the oven. Applicant argues that if this process took place within the oven, it would have been explicitly stated. The Examiner disagrees because the prior passage is sufficient to indicate what "cooling through normal radiation" means.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Cleveland whose telephone number is (571) 272-1418. The examiner can normally be reached on Monday-Thursday, 7-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael Cleveland
Primary Examiner
Art Unit 1762

3/24/2005